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## PORTABLE TERMINAL WEARABLE ON FOREARM

### FIELD OF THE INVENTION

- 5 [0001] The present invention relates to a portable terminal wearable on a forearm, such as a portable personal computer having a display unit.

### BACKGROUND OF THE INVENTION

- 10 [0002] A conventional portable terminal wearable on a forearm, such as a portable personal computer, is worn on a wrist or forearm of a user directly via a belt.

- 15 [0003] The conventional portable terminal wearable on the forearm will be explained with reference to the drawings. Fig. 4 is a perspective outline view of a portable terminal wearable on a forearm. A display unit 41 incorporates a liquid crystal display 42. At a back side of a display screen 42a of a case 43 of the display unit 41, a fixing band 44 for being fixed near the wrist of a forearm, and a holding member 45 through which the fixing band 44 is passed, are provided.

- 20 [0004] When this portable terminal is worn on the forearm, the display unit 41 is fixed and worn by winding the fixing band 44, passing through the holding member 45 around the wrist of the forearm, and the display screen 42a faces outwardly. The user operates the terminal while watching the display screen 42a.

- 25 [0005] When watching the display screen 42a, the user has to move the arm on which the terminal is worn so that the screen 42a may be almost perpendicular to a visual axis of the user. If the hand of this arm is being used at this time to perform an operation, the operation must be interrupted. Further, the display screen 42a is not protected from an unexpected external impact.

## **SUMMARY OF THE INVENTION**

- [0006] A portable terminal has a display screen which can be adjusted to be almost perpendicular to a visual axis of a user without interrupting an operation being performed by the user, and can be protected from an unexpected external impact.
- 5 [0007] The terminal comprises a display unit having a display screen at a front side, a forearm mounting unit for mounting the display unit on a forearm near a wrist of a user, and a hinge case for rotatably connecting the display unit and forearm mounting unit. The hinge case includes a first rotary mechanism to which the forearm mounting unit is rotatably connected, and a second rotary mechanism to which the display mounting unit is rotatably connected. The first and second rotary mechanisms operate to turn the display screen to a position nearly perpendicular to a visual axis of the user, and to turn the display screen to a position where the screen faces downwardly toward a forearm side.
- 10 [0008] Thus, the display screen is visible under a condition that the screen is adjusted nearly perpendicular to the visual axis of the user. When not in use, the display screen is faced downwardly, so that the display screen is to be protected from an unexpected external impact.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

- 20 [0009] Fig. 1 is a perspective view of a portable terminal wearable on a forearm according to an exemplary embodiment of the present invention.
- [0010] Fig. 2 is a perspective view showing a state where the portable terminal wearable on the forearm according to the embodiment is operated with a hand.
- 25 [0011] Fig. 3 is a perspective view showing a state where the display unit of the portable terminal wearable on the forearm according to the embodiment is not operated.

**[0012]** Fig. 4 is a perspective view of a conventional portable terminal wearable on a forearm.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

**5 [0013]** An exemplary embodiment of the present invention will be described below while referring to Fig. 1 to Fig. 3.

**[0014]** Fig. 1 is a perspective view of a portable personal computer or a portable terminal, wearable on a forearm according to an exemplary embodiment of the present invention. Fig. 2 is a perspective view showing a state where the 10 terminal is operated with a hand. Fig. 3 is a perspective view showing a state where a display unit is not operated. A display unit 2 of the portable terminal 1 has a display screen 3 composed of a liquid crystal display device and a touch panel, i.e. an input device. The unit 2 further incorporates a circuit board (not shown), a wireless module (not shown), an antenna (not shown), and a battery (not shown). A 15 case of the display unit 2 is composed of a front cabinet 4 holding the display screen 3, and a back cabinet 5 made of rigid metal material. Reference numeral 6 denotes a hinge case comprising a first rotary mechanism, having an axis 6a, to which a forearm mounting unit 7 is rotatably connected, and a second rotary mechanism, having an axis 6b, to which the display unit 2 is rotatably connected. 20 The forearm mounting unit 7 has a forearm fixing band 8 for fixing the terminal near a wrist of a forearm of a user.

**[0015]** In Fig. 2, the portable terminal 1 is worn near the wrist of the forearm via the forearm fixing band 8 of the forearm mounting unit 7. First, by turning the first 25 rotary mechanism 6a, the user moves the hinge case 6 and display unit 2 to a certain angle with respect to the forearm mounting unit 7, so that an x-axis of the display screen 3 of the display unit 2 may become visible. Then, by turning the second rotary

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[0015] mechanism 6b, the user moves the display unit 2 to a certain angle with respect to the hinge case 6, so that a Y-axis of the display screen 3 may become visible.

[0016] As a result, the user can observe the display screen 3 adjusted to be nearly perpendicular relative to a visual axis of the user, and continue to operate the terminal while watching the display screen, without interrupting an operation being performed by the hand of the forearm on which the terminal is mounted. The user can input an operation through the touch panel easily without moving the arm on which the portable terminal 1 is worn.

[0017] The display unit is not operated in Fig. 3. To position the display unit as shown in Fig. 3, the user initially turns the second rotary mechanism 6b, so that the display screen 3 of the display unit 2 becomes positioned parallel to the hinge case 6, and that the display screen 3 faces the forearm mounting unit 7. Then, the user turns the first rotary mechanism 6a, so that the hinge case 6 and display unit 2 contact the forearm mounting unit 7. At this time, the back cabinet 5 of the display unit 2 faces outwardly.

[0018] That is, when the display screen 3 is not operated, the rigid back cabinet 5 of the display unit 2 faces outwardly, so that the display screen 3 and the internal liquid crystal display device can be protected from an unexpected impact.

[0019] According to the embodiment, the back cabinet 5 of the display unit 2 is made of rigid metal, but may be made of reinforced resin.

[0020] The axis 6a of the first rotary mechanism of the hinge case 6, and the axis 6b of the second rotary mechanism cross each other substantially perpendicularly. Under a condition that a user adjusted the display screen 3 almost perpendicularly to the visual axis of the user about the axis 6b of the second rotary mechanism, the user rotates the display unit about the axis 6a of the first rotary mechanism. Thereby, the visual axis of the user does not drift while the display unit 2 is turned right or left.

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- [0021] Moreover, since a wireless module and antenna are incorporated in the display unit, harness from the display unit 2 to an outside exterior thereof is not necessary, and structure of the hinge case is hence simplified. The harness is free from risk of disconnection due to rotation.
- 5 [0022] Further, the touch panel, as a pen input device, which is embedded in the display unit 2 enables an input operation on the display screen 3 only around the forearm, and another input device is not needed.
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